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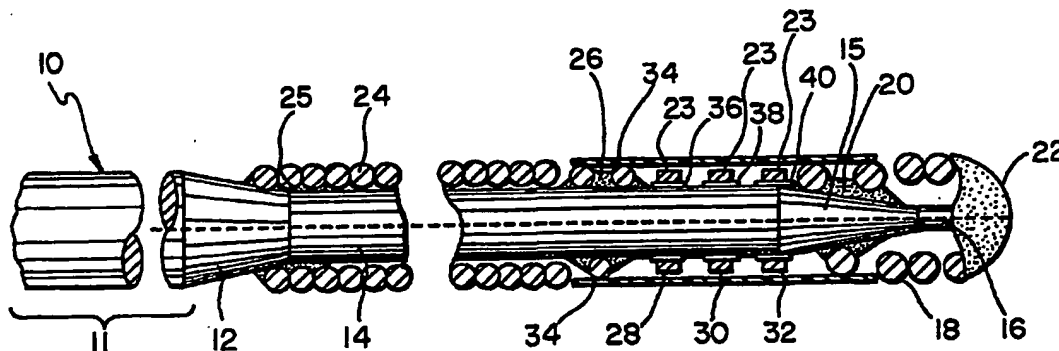
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(54) Title: CATHETER GUIDEWIRE WITH RADIOPAQUE MARKERS



(57) Abstract

A guidewire for use with a catheter has varying radiopacity as well as at least one radiopaque marker in its distal end. In one embodiment, the guidewire includes a shaft having a distal radiopaque coil supported by and attached to a distal portion of the shaft and a proximal radiopaque coil supported by and attached to an intermediate portion of the shaft. The proximal and distal coils are spaced apart from one another. The distal coil may be more radiopaque than or equally radiopaque to the proximal coil such that when viewed under fluoroscopy, the highly radiopaque coil will define a dark image whereas the more proximal radiopaque coil will define a moderately radiopaque image or both will define a dark image. The area between the two coils will appear white. Between the coils, at least one radiopaque marker band is attached to the shaft. The marker bands provide several reference lengths for a physician. A polymer sleeve encases the marker bands and the shaft between the first and second coils providing a uniform outer diameter to the distal region of the guidewire. In another embodiment, the proximal coil of the first embodiment is absent and the polymer sleeve extends proximally of the radiopaque marker bands. In a further embodiment, a radiopaque coil having varying pitch along its length is supported by and attached to a distal region of the core wire.

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 95/03076

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 A61M25/01

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 A61M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO,A,92 19151 (TARGET THERAPEUTICS) 12 November 1992 see page 3, line 26 - page 4, line 3 see page 4, line 23 - line 33 see page 5, line 14 - page 7, line 6 see figure 2	1,6,7
A	---	2
A	US,A,5 267 574 (VIERA ET AL) 7 December 1993 see column 2, line 41 - column 4, line 37 see figure 4	3,4
A	---	5
A	US,A,5 144 959 (GAMBALE ET AL.) 8 September 1992 cited in the application see column 4, line 47 - line 62 -----	

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

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- * "E" earlier document but published on or after the international filing date
- * "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- * "O" document referring to an oral disclosure, use, exhibition or other means
- * "P" document published prior to the international filing date but later than the priority date claimed

- * "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- * "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- * "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- * "a" document member of the same patent family

Date of the actual completion of the international search

26 June 1995

Date of mailing of the international search report

28.09.95

Name and mailing address of the ISA

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SCHOENLEBEN J.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 95/ 03076

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. Claims: 1-7 A guidewire comprising a shaft and a distal and a proximal radiopaque coil.
2. Claims: 8-11 A guidewire comprising a shaft, a distal radiopaque coil and a radiopaque marker.
3. Claims: 12-21 A guidewire comprising a shaft and a distal coil.

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-7

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 95/03076

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO-A-9219151	12-11-92	AU-B- 659650	25-05-95
		AU-A- 1928492	21-12-92
		CA-A- 2086093	08-11-92
		EP-A- 0585359	09-03-94
		JP-T- 6504706	02-06-94
		NO-A- 933963	02-11-93
		PT-A- 100470	29-04-94
		US-A- 5228453	20-07-93

US-A-5267574	07-12-93	NONE	

US-A-5144959	08-09-92	JP-A- 3133463	06-06-91
